

# Memorandum



**CITY OF BRYAN**  
*The Good Life, Texas Style.™*

**To:** Andrew Nelson, Mayor  
**CC:** Kean Register, City Manager; Bryan City Council  
**From:** Paul Kaspar, P.E., CFM *PK.*  
**Date:** 10/15/2019  
**Re:** Flood Mitigation Plan Annual Report

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On June 12, 2018 the City of Bryan adopted an updated Flood Mitigation Plan. The goal of this plan is to create a strategy for implementing flood mitigation measures for the community. It was been prepared as a 5-year update to the second Plan adopted with the 2013 City of Bryan Comprehensive Plan Update. It is the intent that this plan, educate and encourage support for projects that will prevent new flooding problems, reduce losses and protect the beneficial functions of our floodplains.

From late 2017 through March 2018, the Public Works Department conducted an update process of the plan which included forming a committee comprised of city staff and local citizens. With the exception of the kick-off meeting, these meetings were open to the public and agendas were posted publicly in accordance with the Texas Open Meetings Act. A review of the 2013 plan was conducted using experiences from flooding impacts since the 2013 plan was implemented. From that review, four goals were established:

1. Develop and improve outreach and public awareness
2. Protect and enhance natural floodplain and storm water resources
3. Provide fiscally responsible funding
4. Protect the health and safety of the public

An Action Plan was developed to track progress of these goals over the next five years. The current plan will expire in 2023 at which time it will need to be updated.

An annual progress report based upon this Action Plan has prepared and submitted with the annual Community Rating System (CRS) recertification. This report covers progress on the four goals set by the Flood Mitigation Plan along with other identified improvements to our floodplain management practices. A copy of this progress report is now provided to the Mayor and Council under this memo. This report will be published on the City website to make it available to the media and the public.

Table 2: Action Plan

Summary of Mitigation Actions							FMP Goals				STATUS
	Mitigation Action	Priority	Cost Range	Potential Funding Source	Timeframe for Completion from Plan Adoption	Responsible Department	Develop & Improve Outreach & Public Awareness	Protect / Enhance Natural FP & Stormwater Resources	Provide fiscally responsible funding	Protect health & safety of public	Year 1 2018 - 2019
<b>1</b>	<b>Preventive Activities</b>										
1.1	Continue Ongoing Preventive Activities										
1.1.a	Maintain GIS inventory of stormwater assets	High	0	General Fund	Ongoing	Engineering		x		x	Ongoing action.
1.1.b	Using the potential areas of high water information (2D model and public information) to make better planning decisions	High	0	General Fund	Ongoing	Engineering		x		x	Continue to utilize 2D model.
1.1.c	Development review	High	0	General Fund	Ongoing	Engineering / Building		x		x	Ongoing action.
1.2	Continue and improve stormwater maintenance program										
1.2.a	Add open channel inspections to regular maintenance programs	High	<\$100k	General Fund	Year 2	Transportation / Drainage			x	x	No action to date.
1.2.b	Perform a channel inventory including type, condition, and include in maintenance program	Medium	<\$100k	General Fund / Drainage Utility Fund	Ongoing/Year 5	Transportation / Drainage		x	x	x	In the planning stages.
1.2.c	Establish a CCTV program for pipe inspections	High	<\$250k	General Fund / Drainage Utility Fund	Year 2	Transportation / Drainage		x	x	x	Funds are being allocated for the purchase of equipment to expand current capabilities.
1.2.d	Codify and continue requirement of detention pond bottom markers	High	0	General Fund	Year 2	Engineering		x		x	Due May 2020
1.2.e	Annual review of detention ponds and require maintenance	High	<\$50k	General Fund	Ongoing	Transportation / Drainage		x		x	Detention ponds are inspected as time allows. COB is looking to allocate more resources, when identified.
1.3	Expand floodplain mapping and data availability										
1.3.a	Add to and improve stormwater inventory and GIS data	High	0	General Fund	Ongoing	Transportation / Engineering	x			x	Our GIS layers are updated as time allows.
1.3.b	Create flood risk overlays for areas outside the FEMA floodplain that are subject to the flooding (using the 2D model) and develop local regulations for those areas	High	<\$250k	Drainage Utility Fund	Years 2-5	Engineering	x			x	The 2D model is a current layer in our GIS. The next step is to draft regulation requirements.
1.3.c	Improve flood study mapping available to the public online	Medium	<\$50k	General Fund	Year 3	Engineering	x			x	This will be developed jointly with 1.3.b.
1.3.d	Review and update existing floodplain maps	High	<\$250k	Drainage Utility Fund	Ongoing	Engineering		x		x	Ongoing action.
1.3.e	Adopt and implement sustainable flood-management policies	High	<\$50k	General Fund / Drainage Utility Fund	Year 5	Engineering		x		x	No action to date.
1.3.f	Monitor and update statistical rainfall numbers as soon as available	High	0	General Fund	As soon as data is available	Engineering				x	Information is available and reviewed; will be incorporated into next revision to Design Guidelines.
1.4	Open space preservation										
1.4.a	Coordinate open space opportunities with flood control needs for new developments and repetitive loss areas	Medium	0	General Fund	Ongoing	Engineering		x	x	x	Ongoing action.
<b>2</b>	<b>Property Protection</b>										
2.1	Provide educational opportunities to increase flood insurance participation										
2.1.a	Perform a detailed review of flood insurance on city owned properties	Medium	0	General Fund	Year 2	Engineering / Risk Management				x	No action to date. Coordinate with Risk. Due May 2020.
2.2	Update information and links on flooding FAQ page										
2.3	Encourage relocation, acquisition, and capital improvement projects to reduce flood losses										
2.3.a	Develop a voluntary property acquisition plan and program for repetitive loss areas	High	<\$5M	Grants / Drainage Utility Fund / General Fund	Ongoing	Engineering			x	x	Ongoing efforts - official policy needs to be drafted and considered by Council. Current direction is to consider only RL and SRL properties through federal grant programs.
2.3.b	Pursue grants to complete property acquisition projects	High	0	General Fund	Ongoing	Engineering			x	x	Continue to review all grant opportunities and select those beneficial to the City long term
2.3.c	Explore development of a program to assist property owners with elevation and relocation projects for residential structures	Medium	<\$50k	Drainage Utility Fund	Year 5	Engineering	x		x	x	No action at this time.
<b>3</b>	<b>Natural Resource Protection</b>										
3.1	Maintain current Natural Preserved areas										
3.1.a	Continue to allow and promote the dedication of some floodplain acreage toward parkland. Work with Parks Board to establish guidelines for the consistent allowance of this type of dedication	High	<\$500k	General Fund / Park fees	Ongoing	Parks / Development Services / Engineering		x		x	Parks and Recreation Division is working with Parks Board to be more receptive to floodplain as part of Park dedications as long as there is usable parkland area outside the floodplain associated with the dedication. Examples include Rudder Pointe, Yaupon Trails and Pleasant Hill.

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3.1.b	Train staff on maintenance practices that facilitate natural preservations	High	<\$100k	General Fund	Year 3	Transportation / Drainage		x			No action to date.
3.1.c	Continue the practice of requiring private drainage easements on all creeks	High	0	General Fund	Ongoing	Engineering		x		x	This needs to be incorporated into standard SDRC review comments.
3.2	Develop regulations focused on natural area preservation										
3.2.a	Explore developing ordinances/criteria in the Drainage Design Guidelines that require erosion buffers along creeks	High	0	General Fund	Year 1	Engineering		x		x	This language was proposed in the latest drainage design guideline revisions but are currently meeting resistance from the local development/engineering community. Staff is hopeful to eventually work thru these issues and come to some compromise that provides this beneficial function.
3.2.b	Explore providing incentives to developers to preserve natural areas	Medium	0	General Fund	Year 3	Engineering	x	x			No action to date.
3.2.c	Explore the use of Natural Area Preserved zoning districts in Bryan	Medium	0	General Fund	Year 4	Planning		x		x	No action to date.
3.2.d	Explore developing guidelines/criteria for compensatory storage	Medium	0	General Fund	Year 4	Engineering		x		x	No action to date.
4	Emergency Services										
4.1	Continue ongoing emergency services										
4.1.a	Continue programs to conduct pre and post rain event inspections on known areas of issues	High	0	General Fund	Ongoing	Transportation / Drainage		x		x	Ongoing action. A record of these inspections needs to be developed.
4.1.b	Continue to block streets that become flooded utilizing the flood prone streets list	High	0	General Fund	Ongoing	Transportation / Traffic		x		x	Ongoing action. Evaluating adding flashing beacons to repetitive flood crossings.
4.1.c	Continue social media campaign through Twitter, Facebook, Next-door, City website to notify public of emergency situations	High	0	General Fund	Ongoing	Communication & Marketing	x			x	Ongoing efforts engaging the new Communications and Marketing staff contact.
4.1.d	Protect critical facilities and flood prone areas from debris by expanding the maintenance program to include trash pick-up (including bulk) prior to forecasted large events	Medium	<\$400k	General Fund / Stormwater	Year 4	Transportation / Drainage / Stormwater		x		x	No action to date.
4.2	Expand flood warning system										
4.2.a	Expand social media program during flood events	Medium	0	General Fund	Year 2	Communication & Marketing	x			x	No action to date. Meeting with Communications in December 2019.
4.2.b	Explore use of city wide 2D model to consolidate rainfall data and produce real-time flood warning/forecasting system to notify residents and city staff for emergency access.	Medium	<\$100k	General Fund / Drainage Utility Fund / Grant	Year 5	Police / Fire / Engineering / Traffic	x			x	No action to date.
4.2.c	Create public information campaign to encourage participation in Code Red	High	<\$50k	General Fund	Ongoing	Fire	x			x	Working with Community Emergency Operations Center staff to develop this. Currently verbal outreach has been the method.
4.2.d	Explore installing "Street May Flood" signs to critical locations	High	<\$500k	General Fund	Ongoing	Engineering / Traffic / Streets & Drainage	x			x	Ongoing action. Evaluating adding flashing beacons to repetitive flood crossings.
4.3	Improve hazard response operations										
4.3.a	Investigate grant funding available for emergency services	Low	0	Grant / General Fund	Ongoing	Fire			x	x	Ongoing action.
4.4	Implement additional emergency operation plans and services for areas of high risk of flooding										
4.4.a	Work with organizations serving functional/access needs populations (elderly, wheelchair-bound, deaf, blind, such as Brazos Valley Council on Independent Living) that may require special assistance, that tie in with 9-1-1, GIS Systems, etc. so that vulnerable citizens can be checked on, notified, supported, or educated effectively in the event of disasters.	High	<\$50k	General Fund	Year 4	Fire	x			x	Currently the Health Care Coalition Group is working to pull together data sources on where these populations exist. Encouraging registration with STER state website to voluntarily gather this data.
4.4.b	Update and maintain the City of Bryan Hazard Mitigation website with information promoting hazard mitigation and disaster awareness	High	<\$50k	General Fund	Year 2	Fire	x			x	The Hazard Mitigation Plan was updated in 2019. There is currently no website presence. Will work to develop a website or link to County website by Aug 2020.
4.4.c	Develop a pre-disaster recovery plan for hazard/disaster events	Medium	<\$50k	General Fund	Year 3	Fire				x	This is currently being discussed on when to begin and the scope of the project.
4.4.d	Develop/review/update the debris management plan	Medium	<\$50k	General Fund / Solid Waste	Year 3	Solid Waste		x		x	No action to date.
4.4.e	Review and assess the use of the Brazos Center and other shelters during flooding events	High	<\$50k	General Fund	Ongoing	Fire				x	Ongoing action.



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5	Structural Projects										
5.1	Continue ongoing structural projects										
5.1.a	Continue to implement Stormwater Master Plan projects as funding allows	High	>\$5M	Drainage Utility Fund / Bonds / Grants	Ongoing	Engineering			x	x	Ongoing - some projects included in CIP.
5.2	Reduce flood risk through storm drain capital improvement projects										
5.2.a	Prioritize drainage studies and improvements to maximize flood risk reduction	High	0	General Fund	Ongoing	Engineering				x	On going action - need to re-evaluate 2010 Stormwater Masterplan rankings.
5.2.b	Design, construct and maintain drainage improvement projects per the studies in Appendix I.	High	>\$5M	Drainage Utility Fund / Bonds / Grants	Ongoing	Engineering				x	Various projects listed in Appendix I "Stormwater Masterplan" are included in the 5 year CIP program - examples are Melba Circle Storm Sewer, Bristol/Esther Storm Sewer, Hillside/Oaks Drainage, Burton/Briar Creek Stabilization.
5.2.c	Provide update of the Stormwater Masterplan including revisions to the ranking criteria every 5 years	High	<\$250k	General Fund	Year 2	Engineering				x	Not started - task for 2020 - determine how to proceed by Jan 2020.
5.3	Reduce flood impacts through detention										
5.3.a	Perform study to determine locations ideal for regional detention	High	<\$100k	Drainage Utility Fund	Year 2	Engineering				x	Not started - hire consultant in early 2020 to evaluate.
5.3.b	Continue to construct local and regional stormwater detention facilities in flood prone areas	High	>\$5M	Drainage Utility Fund / Bonds	Ongoing	Engineering				x	As CIP projects allow we are considering Regional Detention Facilities. Examples of constructed ponds include regional detention ponds in Cottonwood Branch watershed off Lee Street and off Cedar Street that were constructed with 28th and Beck Street. More recently a pond was constructed on the Bonham Elementary School Campus that was recommended from a TWDB Grant Study of the Lyndale Acres Subdivision. Included in upcoming projects are ponds with the Palasota Drive CIP project and land acquisition for S. College Regional Pond and a second pond around Bonham Elementary School.
5.3.c	Perform study to determine if lowering the lake level at Regional Park would be beneficial to reduce flooding	High	<\$100k	Bonds	Year 1	Engineering					A brief analysis was performed as part of a Preliminary Engineering Report for the Regional Park Development and the results were disappointing showing little downstream effect on flooding properties and overtopping of Villa Maria (Major Arterial). The proposed lake design will increase the size and depth of the lake and offer some benefit to downstream properties but it is negligible. The report pointed to significant downstream channel modifications and roadway modifications to achieve measurable benefits.
5.4	Reduce flood risk at hazardous road crossings										
5.4.a	Develop a plan to upgrade existing low water crossings to improve service levels	Low	<\$100k	General Fund / Bonds / Drainage Utility Fund	Year 5	Engineering				x	No action to date. We have met with university staff about a pilot program for water-over-the-road detection that would trigger flashing beacons at low water crossings.
5.4.b	Increase capacity of existing culverts and bridges on major thoroughfares (Old Reliance Rd., Broadmoor low water bridge, W. Villa Maria between Cavitt and Texas Avenue) and single access subdivisions (see 2D Report list) to allow passage during 100-year event	High	>\$5M	General Fund / Bonds / Drainage Utility Fund	Ongoing	Engineering				x	Palasota, Still Creek Culverts (5 locations) and W 17th Street Culverts are an example of this type of project currently underway. Engineering modeling is used to evaluate the capacity of the proposed culverts to ensure passing of the large storm events. 100 year is the goal in key locations (such as single access roads) to lower events that comply with BCS Design Manual.

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5.4.c	Explore list of roads flooded during 2016/2017 rainfalls and research emergency access availability to residents given these flooded conditions	High	0	General Fund	Year 2	Engineering				x	Need to meet w/ Fire Dept and Streets and Drainage Dept to discuss.
5.5	Pursue partnerships to complete stormwater projects										
5.5.a	Develop collaborative program between the stormwater and parks department to create opportunities for flood protection and recreation in open spaces	High	<\$1M	Parks / Drainage Utility Fund	Ongoing	Engineering/ Parks			x	x	Parks and Recreation are involved in CIP projects that have parkland adjacent or near to the project. They are also on the Site Development Review Committee and work collaboratively with Engineering and Development Services to take on strategic opportunities for flood protection and recreation in open spaces. Examples of Parkland in new developments that are utilizing floodplain include Pleasant Hill, Yaupon Trails, and Rudder Pointe.
5.5.b	Explore creating a system for development incentives for improving city storm water infrastructure	Low	<\$50k	General Fund	Year 5	Engineering / Development Services			x	x	No action to date.
5.5.c	Continue to pursue partnerships with BISD to complete stormwater projects on school sites	Medium	<\$500k	Parks / General Fund	Ongoing	Engineering / Parks			x	x	Ongoing action. Recent feedback from Bonham Elementary School pond is that BISD is not in favor of these on school campuses.
5.5.d	Identify opportunities for public and private (developer) partnerships to complete needed storm improvements	Medium	<\$500k	Drainage Utility Fund / General Fund	Ongoing	Engineering / Development Services				x	Ongoing action.
6	Public Information										
6.1	Continue ongoing public information activities										
6.2	Create targeted outreach program										
6.2.a	Direct mail of FEMA flood protection information to targeted areas of high flood risk	Medium	<\$50k	General Fund	Ongoing	Engineering	x			x	Ongoing action.
6.2.b	Develop a dam safety public education and evacuation plan for at-risk areas of the community, including routes, transportation, and housing	High	<\$100k	General Fund	Year 3	Engineering / Communications / Fire / Streets & Drainage	x			x	No action to date.
6.2.c	Educate realtors regarding real estate disclosure as relates to flooding	High	0	General Fund	Ongoing/Year 2	Engineering	x			x	No action.
6.2.d	Educate builders and landscape companies on how to properly grade new homes to protect from flood damage	High	0	General Fund	Ongoing/Year 2	Engineering / Building	x			x	Added standard lot grading detail to Building Services web page. Where this cannot achieved, a site specific drainage plan is now required.
6.3	Provide general outreach to community regarding flood risk										
6.3.a	Participate in First Fridays with flood risk educational material	Medium	<\$50k	General Fund	Ongoing/Year 2	Engineering / Communications & Marketing	x			x	In the planning stages. Roll-out Spring '20.
6.3.b	Create Facebook group for stormwater	Medium	0	General Fund	Year 3	Communications & Marketing	x				No action to date.
6.3.c	Hold a large community event dedicated to stormwater education annually (Earth Day)	High	<\$50k	General Fund	Ongoing/Year 3	Engineering / Streets & Drainage	x			x	In the planning stages. Roll-out Spring '20.
6.3.d	Create adopt-an-inlet and adopt-a-creek programs	Medium	<\$50k	General Fund	Year 5	Streets & Drainage	x	x		x	No action to date.
6.3.e	Continue to hold public meetings during stormwater capital improvement projects	High	0	General Fund	Ongoing	Engineering	x				Examples of this include Melba Circle and Still Creek Culverts.
6.3.f	Become more active in flood awareness week through additional social media outlets and community events	Low	<\$50k	General Fund	Year 5	Engineering / Communications & Marketing	x				No action to date.
6.3.g	Develop paid advertisements through public service announcements to educate the public about flood insurance and flood risk	Medium	<\$50k	General Fund	Year 4	Engineering / Communications & Marketing	x				No action to date.
6.3.h	Develop and improve communication regarding preparedness and mitigation actions to better inform developers, engineers, builders, and the public about ways they can avoid flood damage.	Medium	<\$50k	General Fund	Year 4	Engineering / Communications & Marketing	x				No action to date.
6.3.i	Develop and present citizen floodplain and flood insurance education programs	High	<\$50k	General Fund / Drainage Utility Fund	Year 2	Engineering	x				Goal is to begin First Friday presence by January 2020.
6.3.j	Create educational program for flood risk to schools and youth	Low	<\$50k	General Fund	Year 5	Engineering	x			x	No action to date.
6.3.k	Provide technical assistance to the public on how to interpret flood data	Medium	0	General Fund	Ongoing	Engineering	x			x	Ongoing action.
6.3.l	Create public information program to be used after flooding events that discusses the following: mold cleanup, hazards in the water, trash debris cleanup, mosquito/bug infestation, TADD, electrocution, and citizen safety	Medium	<\$50k	General Fund	Year 2	Communications & Marketing	x			x	Goal is to begin First Friday presence by January 2020.